Appendix F

Emission Inventory Reporting Requirements 40 CFR Part 51.122

be expected from the State's implementation of such regulations.

(2) If a State adopts an emissions trading program that differs substantively from 40 CFR part 96 in only the following respects, then such portion of the State's SIP revision is approved as set forth in paragraph (p)(1) of this section:

(i) The State may expand the applicability provisions of the trading program to include units (as defined in 40 CFR 96.2) that are smaller than the size criteria thresholds set forth in 40 CFR 96.4(a);

(ii) The State may decline to adopt the exemption provisions set forth in 40 CFR 96.4(b);

(iii) The State may decline to adopt the opt-in provisions set forth in subpart I of 40 CFR part 96;

(iv) The State may decline to adopt the allocation provisions set forth in subpart E of 40 CFR part 96 and may instead adopt any methodology for allocating NO_X allowances to individual sources, provided that:

(A) The State's methodology does not allow the State to allocate NO_X allowances in excess of the total amount of NO_X emissions which the State has assigned to its trading program; and

(B) The State's methodology conforms with the timing requirements for submission of allocations to the Administrator set forth in 40 CFR 96.41; and

(v) The State may decline to adopt the early reduction credit provisions set forth in 40 CFR 96.55(c) and may instead adopt any methodology for issuing credit from the State's compliance supplement pool that complies with paragraph (e)(3) of this section.

(3) If a State adopts an emissions trading program that differs substantively from 40 CFR part 96 other than as set forth in paragraph (p)(2) of this section, then such portion of the State's SIP revision is not automatically approved as set forth in paragraph (p)(1) of this section but will be reviewed by the Administrator for approvability in accordance with the other provisions of this section.

(q) *Stay of Findings of Significant Contribution with respect to the 8-hour standard.* Notwithstanding any other provisions of this subpart, the effectiveness of paragraph (a)(2) of this section is stayed.

[63 FR 57491, Oct. 27, 1998, as amended at 63 FR 71225, Dec. 24, 1998; 64 FR 26305, May 14, 1999; 65 FR 11230, Mar. 2, 2000; 65 FR 56251, Sept. 18, 2000; 69 FR 21642, Apr. 21, 2004]

§51.122 Emissions reporting requirements for SIP revisions relating to budgets for NO_X emissions.

(a) For its transport SIP revision under §51.121 of this part, each State must submit to EPA NO_X emissions data as described in this section.

(b) Each revision must provide for periodic reporting by the State of NO_X emissions data to demonstrate whether the State's emissions are consistent with the projections contained in its approved SIP submission.

(1) *Annual reporting.* Each revision must provide for annual reporting of NO_X emissions data as follows:

(i) The State must report to EPA emissions data from all NO_X sources within the State for which the State specified control measures in its SIP submission under §51.121(g) of this part. This would include all sources for which the State has adopted measures that differ from the measures incorporated into the baseline inventory for the year 2007 that the State developed in accordance with §51.121(g) of this part.

(ii) If sources report NO_X emissions data to EPA annually pursuant to a trading program approved under §51.121(p) of this part or pursuant to the monitoring and reporting requirements of subpart H of 40 CFR part 75, then the State need not provide annual reporting to EPA for such sources.

(2) *Triennial reporting.* Each plan must provide for triennial (i.e., every third year) reporting of NO_X emissions data from all sources within the State.

(3) *Year 2007 reporting.* Each plan must provide for reporting of year 2007 NO_X emissions data from all sources within the State.

(4) The data availability requirements in §51.116 of this part must be followed for all data submitted to meet the requirements of paragraphs (b)(1),(2) and (3) of this section.

(c) The data reported in paragraph (b) of this section for stationary point

weekday/weekend activity ratio, submit separate activity level information for weekday days and weekend days).

(viii) Source of activity data.

(ix) Pollutant code.

(x) Summer work weekday emissions.

(xi) Ozone season emissions.

(xii) Source of emissions data.

(2) [Reserved]

(f) *Approval of ozone season calculation by EPA.* Each State must submit for EPA approval an example of the calculation procedure used to calculate ozone season emissions along with sufficient information for EPA to verify the calculated value of ozone season emissions.

(g) *Reporting schedules.* (1) Data collection is to begin during the ozone season 1 year prior to the State's NO_X SIP Call compliance date.

(2) Reports are to be submitted according to paragraph (b) of this section and the schedule in Table 1. After 2008, trienniel reports are to be submitted every third year and annual reports are to be submitted each year that a trienniel report is not required.

TABLE 1.—SCHEDULE FOR SUBMITTING REPORTS

Data collection year	Type of report required
2002	Trienniel.
2003	Annual.
2004	Annual.
2005	Trienniel.
2006	Annual.
2007	Year 2007 Report.
2008	Trienniel.

(3) States must submit data for a required year no later than 12 months after the end of the calendar year for which the data are collected.

(h) *Data reporting procedures.* When submitting a formal NO_X budget emissions report and associated data, States shall notify the appropriate EPA Regional Office.

(1) States are required to report emissions data in an electronic format to one of the locations listed in this paragraph (h). Several options are available for data reporting. States can obtain information on the current formats at the following Internet address: *http://www.epa.gov/ttn/chief,* by calling the EPA Info CHIEF help desk at (919) 541-1000 or by sending an e-mail to *info.chief@epa.gov.* Because electronic reporting technology continually changes, States are to contact the Emission Factor and Inventory Group (EFIG) for the latest specific formats.

(2) An agency may choose to continue reporting to the EPA Aerometric Information Retrieval System (AIRS) system using the AIRS facility subsystem (AFS) format for point sources. (This option will continue for point sources for some period of time after AIRS is reengineered (before 2002), at which time this choice may be discontinued or modified.)

(3) An agency may convert its emissions data into the Emission Inventory Improvement Program/Electronic Data Interchange (EIIP/EDI) format. This file can then be made available to any requestor, either using E-mail, floppy disk, or value added network (VAN), or can be placed on a file transfer protocol (FTP) site.

(4) An agency may submit its emissions data in a proprietary format based on the EIIP data model.

(5) For options in paragraphs (h)(3) and (4) of this section, the terms submitting and reporting data are defined as either providing the data in the EIIP/EDI format or the EIIP based data model proprietary format to EPA, Office of Air Quality Planning and Standards, Emission Factors and Inventory Group, directly or notifying this group that the data are available in the specified format and at a specific electronic location (e.g., FTP site).

(6) For annual reporting (not for triennial reports), a State may have sources submit the data directly to EPA to the extent the sources are subject to a trading program that qualifies for approval under §51.121(q) of this part, and the State has agreed to accept data in this format. The EPA will make both the raw data submitted in this format and summary data available to any State that chooses this option.

(i) *Definitions.* As used in this section, the following words and terms shall have the meanings set forth below:

(1) *Annual emissions.* Actual emissions for a plant, point, or process, either measured or calculated.

(2) *Ash content.* Inert residual portion of a fuel.

than the point source threshold is an area source.

(25) *Pollutant code.* A unique code for each reported pollutant that has been assigned in the EIIP Data Model. Character names are used for criteria pollutants, while Chemical Abstracts Service (CAS) numbers are used for all other pollutants. Some States may be using storage and retrieval of aerometric data (SAROAD) codes for pollutants, but these should be able to be mapped to the EIIP Data Model pollutant codes.

(26) *Process rate/throughput.* A measurable factor or parameter that is directly or indirectly related to the emissions of an air pollution source. Depending on the type of source category, activity information may refer to the amount of fuel combusted, the amount of a raw material processed, the amount of a product that is manufactured, the amount of a material that is handled or processed, population, employment, number of units, or miles traveled. Activity information is typically the value that is multiplied against an emission factor to generate an emissions estimate.

(27) *SCC. Source category code.* A process-level code that describes the equipment or operation emitting pollutants.

(28) *Secondary control efficiency (%).* The emissions reductions efficiency of a secondary control device, which shows the amount of reductions of a particular pollutant from a process' emissions due to controls or material change. Control efficiency is usually expressed as a percentage or in tenths.

(29) *SIC.* Standard Industrial Classification code. U.S. Department of Commerce's categorization of businesses by their products or services.

(30) *Site name.* The name of the facility.

(31) *Spring throughput (%).* Portion of throughput or activity for the 3 spring months (March, April, May). See the definition of Fall Throughput.

(32) *Stack diameter.* Stack physical diameter.

(33) *Stack height.* Stack physical height above the surrounding terrain.

(34) *Start date (inventory year).* The calendar year that the emissions estimates were calculated for and are applicable to.

(35) *Start time (hour).* Start time (if available) that was applicable and used for calculations of emissions estimates.

(36) *Summer throughput (%).* Portion of throughput or activity for the 3 summer months (June, July, August). See the definition of Fall Throughput.

(37) *Summer work weekday emissions.* Average day's emissions for a typical day.

(38) *VMT by Roadway Class.* This is an expression of vehicle activity that is used with emission factors. The emission factors are usually expressed in terms of grams per mile of travel. Since VMT does not directly correlate to emissions that occur while the vehicle is not moving, these non-moving emissions are incorporated into EPA's MOBILE model emission factors.

(39) *Week/year in operation.* Weeks per year that the emitting process operates.

(40) *Work Weekday.* Any day of the week except Saturday or Sunday.

(41) *X coordinate (latitude).* East-west geographic coordinate of an object.

(42) *Y coordinate (longitude).* North-south geographic coordinate of an object.

[63 FR 57496, Oct. 27, 1998, as amended at 69 FR 21644, Apr. 21, 2004]

Subpart H—Prevention of Air Pollution Emergency Episodes

SOURCE: 51 FR 40668, Nov. 7, 1986, unless otherwise noted.

§51.150 Classification of regions for episode plans.

(a) This section continues the classification system for episode plans. Each region is classified separately with respect to each of the following pollutants: Sulfur oxides, particulate matter, carbon monoxide, nitrogen dioxide, and ozone.

(b) *Priority I Regions* means any area with greater ambient concentrations than the following:

(1) Sulfur dioxide—100 μg/m³ (0.04 ppm) annual arithmetic mean; 455 μg/m³ (0.17 ppm) 24-hour maximum.

(2) Particulate matter—95 μg/m³ annual geometric mean; 325 μg/m³ 24-hour maximum.

Appendix G

Portland Cement Kiln Data

Environmental, Health and Safety

Holcim (US) Inc.
Clarksville Plant
14738 Highway 79 North
Clarksville, MO 63336

Phone 573 242 3571
Fax 573 242 3114
www.holcim.com/us

December 9, 2004

John Rustidge
Air Pollution Control Program
205 Jefferson Street
Jefferson City, MO 65203

Mr. John Rustidge,

After reviewing your request for comments, Holcim (US) Inc. has studied the data that was provided during the non EGU NO_X SIP Call stakeholder meeting on October 19, 2004. We have found an error in the data that was provided for our Clarksville facility. The error was that for the 1995 annual throughput, 2,070,878 tons was listed; this should be 1,143,455 tons.

You also requested that we provide you with a baseline emission value for pounds of NO_X emitted per ton of clinker produced. After doing extensive research I have found that no major modifications were made in the period from 1995 to 2000. Utilizing emissions inventory information along with stack test data I have calculated an uncontrolled emissions rate of 15.42 pounds of NO_X per ton of clinker produced.

I look forward to working with you on this rulemaking and if you have any questions please do not hesitate to call me at (573) 242-3571 extension 1239.

Thank You

Robert S. Mustell
Environmental Engineer

NO_X Emission Rate, Holcim (US) Inc. – Clarksville Facility

The most representative data for NO_X emissions at the Clarksville Plant is the 1998 and 1999 EIQ data. This data is based on a 1997, agency observed, stack test.

The emissions rate demonstrated in the 1997 stack test was a 10.03378 pounds per ton of clinker produced.

In this same test a control efficiency of 36% was demonstrated when burning Hazardous Waste Derived Fuel (HWDF).

$$10.03378 \frac{lb}{ton} \div (1 - 0.36) = 15.68 \frac{lb}{ton}$$

So our uncontrolled emissions rate is $15.68 \frac{lb}{ton}$.

The goal of the NO_X SIP Call that the Environmental Protection Agency (EPA) would like to see a 30% reduction in NO_X emissions.

$$15.68 \frac{lb}{ton} \times (1 - 0.3) = 10.97 \frac{lb}{ton}$$

So utilizing an alternative control technology would require the Holcim (US) Inc. - Clarksville Facility to achieve and emissions rate of $10.97 \frac{lb}{ton}$.

Continental Cement Company

10107 Hwy 79
Hannibal, Missouri 63401
Phone 573/221-1740
Fax 573/221-1689

CONTINENTAL CEMENT COMPANY

Missouri Fuel Recycler

10107 Hwy 79
Hannibal, Missouri 63401
Phone 573/221-0730
Fax 573/221-0009

December 8, 2004

Mr. John Rustige
Environmental Engineer
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176

Dear Mr. Rustige:

Continental Cement Company, L. L. C., (CCC), is pleased to respond to the NOx Emission Inventory data table review requested in your October 26 E-Mail.

As you know, CCC operates a cement kiln designed and permitted to operate on coal or natural gas. CCC has also obtained permits for the use of alternative waste fuels for the kiln, and by utilizing those waste fuels, CCC provides environmentally beneficial services that reduce the burden on landfills and preserve natural resources for future generations. The use of liquid alternative fuels is also an effective control mechanism for NOx, which was in use during the 1995 – 1996 baseline years, and was reflected in reduced NOx emissions reported in the EIQs.

Our response will provide corrections to the information in the data table you provided, and calculated uncontrolled NOx baseline emissions for the 1995 – 1996 operating years based upon baseline test data that was submitted in 1999.

Please note that the emission factor 2.67 lb/ton is a PM–10 factor. The controlled NOx factor for our kiln is 6.12 lb/ton, which meets the standard for long wet kilns in the 1999 Draft Rule on an annual basis.

Continental Cement Kiln	1995	1996
Annual Throughput (tons)	576,805	591,120
Reported Emission Factor	6.12	6.12
Annual Controlled NOx (tons)	1,764.64	1,808.43
Demonstrated NOx Control (1999 test)	41.2 % *	
Uncontrolled Emission Factor	10.41	
Coal Baseline Uncontrolled NOx (tons)	3,002.27	3,076.78

* Documentation provided in February 17, 1999 letter, attached. CCC believes this data provides the best available means for determining a coal-fired baseline for the 1995-1996 operating years, and is confident that NOx reductions of 30% or more are achievable, but does not intend to imply that reductions > 40% will be routine.

As we discussed Monday morning, the industry group continues to gather information from other States, hoping that we can effectively pool our resources and help to work with the Air Program to expedite a NOx SIP strategy that will be acceptable to all parties. We will keep you appraised of our progress, and hope to meet with you to provide input to the draft rule early in the coming year.

As always, CCC is happy to provide any additional information you may need. Please do not hesitate to call our offices to discuss any aspect of the matter.

Sincerely, Continental Cement Company

Jerry Epperson, Environmental Manager

Cc: Doug Sisco
Sam Waters
Tom Grever

ENCLOSURES

Continental Cement Company

P.O.Box 71, 10107 Hwy 79
Hannibal, Missouri 63401
Phone 573/221-1740
Fax 573/221-1689

CONTINENTAL CEMENT COMPANY

MFR

Missouri Fuel Recycler

P.O.Box 150, 10107 Hwy 79
Hannibal, Missouri 63401
Phone 573/248-0730
Fax 573/221-0009

February 17, 1999

Air Pollution Control Program
Division of Environmental Quality
Dept. of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176
Attn. Jeff Bennett, Peter Goode, and Rick Campbell

RE: NOx Baseline Inventory

Gentlemen:

Continental Cement Company (CCC) is submitting data documenting NOx baseline emissions for our cement kiln. Enclosed are actual NOx emissions as measured during a 12-hour test period conducted on 2/13/99. During this test period 100% coal was burned as our baseline fuel. The kiln was operating at steady state conditions with normal clinker production.

The agency's use of 1995 EIQ data is not representative of baseline NOx emissions as alternate control technologies were in place. CCC had previously installed an alternate control technology using a substitute fuel firing system. Data is included showing the NOx emissions over a three year period when utilizing the alternate control technology. The results show over a 30% decrease in NOx emissions.

CCC is submitting comments to EPA's NOx inventory for cement kilns identified in the Regional Transport NOx SIP Call rulemaking. Enclosed is the electronic data being submitted as a comment to EPA to adjust CCC's baseline inventory.

Should you have questions or require additional information, please give me a call.

Yours truly,
CONTINENTAL CEMENT COMPANY, LLC

Gregory G. Haug, PE

C: Greg Stella, EPA

Comment on Cement Kiln Inventory Regional Transport NOx SIP Call

By
Continental Cement Company, LLC
10107 Highway 79
Hannibal, MO 63401
(573) 221-1740

Continental Cement Company (CCC) operates a long wet process cement kiln producing 600,000 tons of clinker per year. CCC has been monitoring NOx concentrations in the stack since 1988. Coal, from southern Illinois, is our base fuel. Typically, NOx concentrations in our stack gas range from 700 PPM to 1200 PPM when burning coal. The range of NOx concentrations results from variations in the source of coal and the raw materials. When producing cement clinker, some raw materials combine more readily while others require higher temperatures to produce a product.

In CCC's cement kiln, three types of NOx emissions are generated.

1). Thermal NOx: (60%–70%) from combining atmospheric nitrogen and oxygen
2). Fuel NOx: (10%–30%) from chemically bound nitrogen in the coal
3). Prompt NOx: (1%–10%) from combining atmospheric nitrogen with hydrocarbon fragments during fuel/air mixing

In order to produce good quality cement clinker, thermal NOx must be produced. Thermal NOx represents the majority of the NOx emissions. Fuel NOx and Prompt NOx are subject to control.

CCC installed an alternate control technology consisting of a substitute fuel firing system. This substitute system allows replacement of a portion of the coal with recovered waste materials. Since the initial installation, various burners have been installed and tested. In addition, the fuel/air mixing system has been modified to produce efficient burning. One of the benefits of installing the alternate control technology system was a lowering of NOx emissions. Today, NOx concentrations in the stack range from 400 PPM to 700 PPM when replacing 50% of the coal with alternative fuels.

On February 13, 1999, CCC performed a test to verify a coal only baseline of NOx concentration and emissions. During the test, the alternative control technology substitute fuel firing system was entirely replaced with coal. For 12 hours, coal was used as the only fuel to establish NOx emission data. The coal only NOx emission data was collected on a minute by minute basis and was utilized to calculate a 12-hour baseline average of NOx emissions. Stack gas flow rates were measured during this test.

Overall, CCC has observed over the recommended 30% reduction from baseline in NOx emissions as a result of the alternate control technology. Attached is a table defining measured NOx stack concentrations for the years 1995, 1996 and 1997. Calculations show the emission reductions from baseline and the NOx emission rate per day.

CCC is requesting that our baseline NOx emissions be revised to 11.38 Tons NOx/day during ozone season as shown in Table 2. CCC is permitted to burn 100% coal and routinely did so until substantial funds (well in excess of $2000/ton) were expended to install the alternate control technology. The use of alternate fuels has provided significant NOx emission reductions, resulting in an average decrease of over 500 tons per ozone season.

Response and Comment
Regarding the Emission Inventories
for Region Nitrogen Oxides State Implementation Plan (NOx SIP) Call
Continental Cement Company (CCC)
Hannibal, Missouri

Table 1 is a list of corrections to operational parameters reported by EPA in the **Emissions Inventories for Regional NOx SIP Call** - *September, 1998.* CCC requests that these discrepancies be addressed.

Table 1

	Stack Height (ft.)	Stack Diameter (ft.)	Stack Gas Temp. (^{0}F)	Stack Flow Rate (dscfm)	Stack Velocity (ft./sec)
EPA Reported Parameter	105	5.05	167	105,000	39.5
Actual Parameter	**150**	**11.75**	**440 to 520**	**113,000 to 127,500**	**17.38 to 19.6**

Actual NOx Emissions with Alternative Control Applied

CCC measures stack-gas NOx concentrations and records these values on a minute by minute basis. NOx emission rates are then calculated by utilizing the recorded concentrations and actual stack gas flow rates measured during stack testing.

Baseline Emissions when Utilizing Coal Only Firing

Baseline data, using 100% coal, has been collected from a 12-hour test period. Table 2 represents a comparison of NOx Emissions when firing CCC's cement kiln with the alternative control technology vs. baseline coal only. This comparison demonstrates significant reductions in NOx emissions when the alternative control technology is used.

Table 2

	Baseline Coal Only**	NOx Emissions with Alternative Control Technology		
		1995	1996	1997
Ozone Season Average NOx Concentration (ppm)	1050	501	561	547
Stack Gas Flow Rate (dscfm)	113,000	124,250	124,250	127,500
NOx Emission During Ozone Season (tons)	1741	786	1023	890
Ozone Season Activity (%)	100%	85.90%	100%	86.90%
Daily NOx Emissions during Ozone Season Based on Activity (tons)	**11.38**	**5.97**	**6.69**	**6.69**
NOx Emission Reduction from Baseline		47.5%	41.2%	41.2%

** Verified by Testing on 2/13/99

NOx Baseline Test

Coal Only Testing
02\13\99
Average Hourly Values

TIME	NOx (ppm)
09:00	1074.72
10:00	1099.82
11:00	1065.65
12:00	1111.2
13:00	1101.92
14:00	997.68
15:00	962.82
16:00	1055.22
17:00	1053.43
18:00	1014.47
19:00	1011.78
20:00	1049.68
12 Hour Average	1050

BUZZI UNICEM USA

MIDWEST DIVISION - Cape Girardeau Plant

January 4, 2005

Mr. John Rustige
Air Pollution Control Program
Missouri Department of Natural Resources
PO Box 176
Jefferson City, Missouri 65102-0176

Re: Non-EGU NOx SIP Call – NOx Emission Inventory

Dear Mr. Rustige:

We are providing the following information in response to your e-mail request of October 26, 2004, for the subject emissions data. As we understand it, the Air Program is looking to compile a baseline emission inventory for sources that will potentially be affected by the rulemaking undertaken in response to the Non-EGU NOx SIP call. The Air Program is asking the cement kiln sources to provide a "before control" emission factor in order to establish a baseline ozone season emission total. This baseline will be determined on a two-year average basis. We also understand that the Department is amenable to allowing cement kilns to consider establishing this baseline from two years within the 1995 through 2000 calendar years.

In the 1995 through 2000 time period we reported our NOx emissions using an emission factor based on site-specific emission data collected in June 1992. This testing was conducted while we were operating the waste-derived fuel program that utilized energy-bearing liquid waste materials as fuel (LWF) in our kiln systems. These materials were co-fired with coal at the time that the emissions data were collected. The resulting emission factor was determined to be approximately 2.52 pounds of NOx per ton of clinker produced.

We recently completed additional emission testing conducted under coal-only and coal/petroleum coke firing conditions. This testing was conducted to establish the current emission capability of our system in preparation of an emission compliance test required under Construction Permit number 092004-007, issued in September of this year.

This recent test event documented that our coal/petroleum coke-only NOx emission factor averaged approximately 5.40 pounds of NOx per ton of clinker produced. In comparing the recent results with the 1992 emission factor it appears the use of LWF imparted a NOx-control effect on the emissions. This stands to reason given that LWF had both a lower nitrogen content and higher moisture content as compared to coal. The lower nitrogen content provided a lower nitrogen loading to the combustion environment,

Buzzi Unicem USA · 2524 South Sprigg Street, P.O. Box 520 · Cape Girardeau, MO 63702-0520 · 573.335.5591 · Fax: 573.334.3522

thereby reducing the availability of nitrogen for NOx formation. The higher moisture content served to reduce the flame temperature in the combustion environment, reducing the potential of the system to form NOx via the "thermal NOx" formation mechanism. In our case, approximately a 47% decrease in NOx emissions was observed by firing LWF in our kiln system.

Therefore, to satisfy your request we have used our 5.40 lb/ton factor together with data from the 1995 through 2000 period to estimate a two-year average ozone season NOx emission rate as follows:

Two-year average clinker production – 595,250 tons per ozone season (TPOS)

Two-year average NOx emissions – 1607.6 TPOS

If you have any questions or should you require additional information, please contact me at (573)335-5591.

Sincerely,

BUZZI UNICEM USA

Paul T. Schell
Environmental Engineer

C: Dan Nugent, Buzzi
Steve Leus, Buzzi

Attachment A

June 1992 NOx Emission Data

TABLE 2-12
APCC (STACK) CEM DATA SUMMARY
BIF COC TEST PROGRAM/PHASE 2
LONESTAR INDUSTRIES, INC.
CAPE GIRARDEAU, MISSOURI
Jun-92

2.9- 32B(SOx) NOx ~~THC~~ CO

TEST# DATE	TIME From	TIME To	CO (ppm)	CO2 (%)	O2 (%)	NOx (ppm)	SO2 (ppm)	THC (ppm)	CO Corr. (ppm)	THC Corr. (ppm dry)	CO Corr. Rolling Avg	THC Corr. Rolling Avg
Test #3 6/25/92	8:33	12:03	2223	16.8	10.7	110	67	24	2947	38	3147	38
Test #4 6/25/92	17:48	20:48	1156.8	16.9	11.1	216	99	22	1611	36	1783	35
Test #5 6/25/92-6/26/92	21:48	1:03	1144.7	16.9	10.8	221	91	20	1559	33	1599	33
Test #7 6/26/92	13:49	16:49	2242	18.7	9.7	208	152	40	2704	57	2983	60
Test #8 6/26/92	17:49	20:49	1917	19.1	9.4	274	190	39	2258	55	2329	56
Test #9 6/26/92-6/27/92	21:34	0:34	2196	18.9	10.1	259	187	38	3136	67	3075	66
		Avg.	1813.25			215	131			47.7		

2.9 - 32C ~~(SOx)~~ HCL & Particulate

TABLE 2-7
PARTICULATE/CHLORINE/HCl DATA SUMMARY
CERTIFICATION OF COMPLIANCE TEST/PHASE 2
LONESTAR INDUSTRIES, INC.
CAPE GIRARDEAU, MISSOURI

TEST NO.	3-CL	4-CL	5-CL
DATE:	6/25/92	6/25/92	6/25/92
TIME :	8:38-10:46	17:50-19:56	22:02-00:10
PROCESS CONDITIONS			
Raw Feedrate (lbs/hr)	469200	484800	482000
Coal Feedrate (lbs/hr)	23680	24160	23280
WDLF Feedrate (lbs/hr)	20448	20016	20064
WDSF Feedrate (lbs/hr)	859	998	907
Tires (lbs/hr)	3000	3000	3000
SAMPLE CONDITIONS			
Volume at STD Conditions (dscf)	67.3	68.6	68.7
Particulate Catch (mg)	82.5	77.3	74.1
Chlorine Catch (mg)	0.1	0.2	0.3
HCl Catch (mg)	15.3	17.3	28.3
Isokinesis (%)	103.3	104.6	105.5
STACK CONDITIONS			
Stack Temperature (°F)	246	246	242
Moisture (%)	14.8	14.6	14.6
Actual Gas Flowrate (acfm)	422041	433547	427157
Corrected Gas Flowrate (dscfm)	262015	269655	267690
EMISSIONS			
Particulate Concentration (gr/dscf)	0.02	0.02	0.02
Particulate Concentration (gr/dscf @ 7% O2)	0.026	0.024	0.023
Particulate Emission Rate (lbs/hr)	42.48	40.13	38.15
Chlorine Emission Rate (g/hr)	23.38	47.14	70.12
Chlorine Emission Rate (g/sec)	0.006	0.013	0.019
HCL Emission Rate (g/hr)	3577	4077	6615
HCL Emission Rate (g/sec)	0.994	1.133	1.837

2.9 - 32D (50A) HCl Reactivity Used for NOx, SO2, CO treatment

TABLE 2–9
SUMMARY OF METALS EMISSIONS
CERTIFICATION OF COMPLIANCE TEST/PHASE2
LONE STAR INDUSTRIES, INC.
CAPE GIRARDEAU, MISSOURI

TEST NO.	7–ME	8–ME	9–ME
DATE:	6/26/92	6/26/92	6/26/92
TIME:	13:51–16:01	18:08–20:20	21:54–00:03
PROCESS CONDITIONS			
Raw Feedrate (lbs/hr)	501600	502200	502200
Coal ~~Raw~~ Feedrate (lbs/hr)	24480	25060	23680
WDLF Feedrate (lbs/hr)	20424	20770	20774
WDSF Feedrate (lbs/hr)	273	273	398
Tires (lbs/hr)	3000	3000	3000
SAMPLE CONDITIONS			
Volume at STD Conditions (dscf)	58.39	61.04	61.06
Isokinesis (%)	102.32	103.55	106.22
STACK CONDITIONS			
Stack Temperature (F)	310	310	310
Moisture (%)	16.21	15.62	15.61
Actual Gas Flowrate (acfm)	417,600	428,400	417,700
Corrected Gas Flowrate (dscfm)	234,600	242,300	236,300
METALS EMISSIONS			
Arsenic (ug/Nm3)	1.597	2.493	2.417
(g/hr)	0.640	1.030	0.970
SRE (%)	99.97	99.97	99.96
Beryillum (ug/Nm3)	0.060	0.058	0.168
(g/hr)	0.020	0.020	0.070
SRE (%)	99.57	99.63	99.58
Cadmium (ug/Nm3)	2.068	17.477	0.057
(g/hr)	0.620	7.200	0.020
SRE (%)	99.98	99.97	99.97
Chromium (ug/Nm3)	13.722	0.058	0.058
(g/hr)	5.470	0.020	0.020
SRE (%)	99.95	99.95	99.94
Lead (ug/Nm3)	15.917	13.705	32.223
(g/hr)	6.340	5.640	12.940
SRE (%)	99.92	99.93	99.93
Zinc (ug/Nm3)	32.426	0.058	22.334
(g/hr)	12.920	0.020	8.970
SRE (%)	99.94	99.96	99.94
Mercury (ug/Nm3)	45.441	39.877	144.799
(g/hr)	18.110	16.420	58.140
SRE (%)	84.26	86.28	86.50
Chrome 6+ (ug/Nm3)	0.409	0.408	0.405
(g/hr)	0.160	0.170	0.160

Attachment B

1997 EIQ Form 2.9
Stack Test/Continuous
Emission Monitoring Worksheet

FORM 2.9 STACK TEST/CONTINUOUS EMISSION MONITORING WORKSHEET

Facility Name	FIPS County No.	Plant No.	Year of Data
Lone Star Industries, Inc.	031	0021	1997

Point No.	AIRS ID-Pt	Source Classification Code (SCC)	Seg. No.	Stack No.	AIRS ID-St
KP02	48	3-05-006-23	2	KP2	20

Pollutant Tested	NOTE
NO_x	Use a separate worksheet for each pollutant tested.

[1] EMISSION SOURCE INFORMATION

Equipment Make/Model	
Cement Kiln/Raw Mill/Clinker Cooler	
Type of Control Device	**Control Efficiency (%)**
None	
Limitations on emissions, production or operating time (if any)	
None	

[2] STACK TEST INFORMATION

Testing Firm Name and Address	EPA Method(s) Used
APCC, 60 Industrial Park West, Tolland, CT 06084	CEM Data Collected During Stack Test

Test Date(s)	Results	Compliance
June 25-26, 1992	215 ppm	☒ Yes ☐ No

Test Technique (Check One)	Latest Calibration of Testing Equipment
☒ Operational Rate ☐ Maximum Design Rate ☐ Both	Before and after stack test

Agency Observing Test	Name of Observer(s)
☐ EPA ☒ MO DNR ☐ Other	Test is an accepted trial burn per MDNR and EPA

[3] CONTINUOUS EMISSION MONITORING INFORMATION

Concentration of Pollutant	Units	Flow Rate of Stack	Units

Latest Calibration of Monitor	Results of Calibration
Monitor Averaging Period	**% Monitor Down Time**

[4] EMISSION FACTOR CALCULATION

Emission Rate*	Units	*NOTE
388.9	Lbs/Hr	Documentation should include summary page information from the test data to verify the emission and production rate.
Production Rate*	**Units/Hr**	
154.19	Tons Clinker Produced/hr	

EMISSION FACTOR =
[{Emission Rate} / {Production Rate}] / [1 - {Control Efficiency (%)} / 100]

Emission Factor	Units
2.52	lbs/ton clinker produced

Enter the EMISSION FACTOR in the appropriate box in Block 7 on Form 2.0, Emission Point Information.
If applicable, enter the CONTROL DEVICE TYPE and CONTROL EFFICIENCY (%) in Block 3 on Form 2.0

Duplicate this form as needed.

Attachment C

November 2004 NOx Emission Data

Buzzi Unicem USA
Cape Girardeau Plant
NOx Emission Data
November 2004

Whole Tires TPH	LWF LPM	Total Coal TPH	Kiln Feed TPH	Clinker Production TPH	NOx PPM	NOx LPM
0	0	16.264	295.9	156.56	210.50	6.28
0	0	20.812	295.9	156.56	217.90	6.50
0	0	20.791	295.9	156.56	221.80	6.62
0	0	20.903	295.9	156.56	234.30	6.99
0	0	21.31	295.9	156.56	232.70	6.94
0	0	21.99	296	156.61	241.80	7.21
0	0	22.25	295.9	156.56	269.40	8.04
0	0	22.46	295.9	156.56	294.70	8.79
0	0	22.56	296	156.61	270.50	8.07
0	0	22.63	295.8	156.51	267.40	7.98
0	0	22.63	295.9	156.56	276.40	8.25
0	0	22.72	296	156.61	282.80	8.44
0	0	22.74	296	156.61	306.40	9.14
0	0	22.72	295.9	156.56	326.00	9.73
0	0	22.71	295.9	156.56	315.50	9.41
0	0	22.68	295.8	156.51	308.70	9.21
0	0	22.61	296	156.61	307.10	9.16
0	0	22.61	295.8	156.51	292.10	8.72
0	0	22.53	295.9	156.56	287.10	8.57
0	0	22.55	295.9	156.56	309.30	9.23
0	0	22.47	295.9	156.56	294.60	8.79
0	0	22.4	295.9	156.56	294.90	8.80
0	0	22.34	295.8	156.51	291.70	8.70
0	0	22.38	295.9	156.56	269.60	8.04
0	0	22.35	296	156.61	279.00	8.32
0	0	22.31	295.9	156.56	263.60	7.86
0	0	22.41	295.9	156.56	270.30	8.06
0	0	22.42	296	156.61	264.20	7.88
0	0	22.57	296	156.61	267.90	7.99
0	0	22.63	295.9	156.56	274.00	8.18
0	0	22.76	295.9	156.56	279.90	8.35
0	0	22.89	296	156.61	294.70	8.79
0	0	22.95	295.9	156.56	296.50	8.85
0	0	22.98	295.9	156.56	310.80	9.27
0	0	23.1	295.8	156.51	325.80	9.72
0	0	23.14	295.9	156.56	299.70	8.94
0	0	23.23	296	156.61	295.40	8.81
0	0	23.23	295.9	156.56	275.50	8.22
0	0	23.2	295.9	156.56	274.90	8.20
0	0	23.14	296	156.61	280.60	8.37
0	0	23.05	295.9	156.56	259.20	7.73
0	0	22.86	296	156.61	263.70	7.87
0	0	22.73	295.9	156.56	260.60	7.78
0	0	22.58	295.9	156.56	254.10	7.58
0	0	22.4	296	156.61	258.80	7.72
0	0	22.18	295.9	156.56	268.00	8.00
0	0	22.03	295.9	156.56	263.50	7.86
0	0	21.98	295.9	156.56	274.00	8.18
0	0	21.89	295.9	156.56	299.70	8.94
0	0	21.94	296	156.61	321.60	9.60
0	0	22.03	296	156.61	349.60	10.43

Buzzi Unicem USA
Cape Girardeau Plant
NOx Emission Data
November 2004

Whole Tires TPH	LWF LPM	Total Coal TPH	Kiln Feed TPH	Clinker Production TPH	NOx PPM	NOx LPM
0	0	22.13	296	156.61	335.70	10.02
0	0	22.21	295.9	156.56	359.00	10.71
0	0	22.39	296	156.61	370.60	11.06
0	0	22.57	295.9	156.56	360.80	10.76
0	0	22.93	295.9	156.56	320.80	9.57
0	0	23.24	295.9	156.56	287.60	8.58
0	0	23.35	296	156.61	255.90	7.64
0	0	23.35	295.9	156.56	263.10	7.85
0	0	23.26	295.9	156.56	250.00	7.46
0	0	23.19	295.9	156.56	263.00	7.85
0	0	23.05	295.8	156.51	285.40	8.52
0	0	22.87	295.9	156.56	320.80	9.57
0	0	22.8	295.9	156.56	333.00	9.94
0	0	22.62	295.9	156.56	353.30	10.54
0	0	22.59	296	156.61	357.10	10.65
0	0	22.54	295.9	156.56	408.50	12.19
0	0	22.48	296	156.61	403.60	12.04
0	0	22.51	295.9	156.56	401.40	11.98
0	0	22.5	295.9	156.56	411.80	12.29
0	0	22.53	295.9	156.56	410.60	12.25
0	0	22.55	295.9	156.56	394.80	11.78
0	0	22.61	295.9	156.56	391.00	11.67
0	0	22.71	295.9	156.56	393.80	11.75
0	0	22.77	295.8	156.51	361.00	10.77
0	0	22.85	296	156.61	334.00	9.97
0	0	22.86	295.9	156.56	320.90	9.57
0	0	22.88	296	156.61	298.30	8.90
0	0	22.41	296	156.61	287.60	8.58
0	0	22.39	295.8	156.51	270.70	8.08
0	0	22.45	295.9	156.56	286.20	8.54
0	0	22.37	295.8	156.51	294.20	8.78
0	0	22.49	295.9	156.56	323.80	9.66
0	0	22.51	295.9	156.56	346.00	10.32
0	0	22.46	295.9	156.56	361.70	10.79
0	0	22.45	296	156.61	390.20	11.64
0	0	22.37	295.9	156.56	347.00	10.35
0	0	22.3	296	156.61	342.30	10.21
0	0	22.27	295.9	156.56	330.30	9.85
0	0	22.21	295.9	156.56	331.00	9.88
0	0	22.28	295.9	156.56	371.50	11.08
0	0	22.35	295.9	156.56	366.80	10.94
0	0	22.29	295.9	156.56	373.30	11.14
0	0	22.39	295.9	156.56	370.00	11.04
0	0	22.46	295.9	156.56	358.30	10.69
0	0	22.52	296	156.61	346.30	10.33
0	0	22.54	295.9	156.56	343.00	10.23
0	0	22.61	295.9	156.56	314.60	9.39
0	0	22.67	295.9	156.56	323.50	9.65
0	0	22.57	295.9	156.56	362.70	10.82
0	0	22.62	296	156.61	353.50	10.55
0	0	22.53	295.9	156.56	344.00	10.26

Buzzi Unicem USA
Cape Girardeau Plant
NOx Emission Data
November 2004

Whole Tires TPH	LWF LPM	Total Coal TPH	Kiln Feed TPH	Clinker Production TPH	NOx PPM	NOx LPM
0	0	22.45	296	156.61	356.60	10.64
0	0	22.47	295.9	156.56	355.50	10.61
0	0	22.38	295.9	156.56	367.00	10.95
0	0	22.37	296	156.61	355.90	10.62
0	0	22.45	296	156.61	348.70	10.40
0	0	22.4	295.9	156.56	362.40	10.81
0	0	22.36	296	156.61	374.50	11.17
0	0	22.38	295.9	156.56	383.30	11.44
0	0	22.56	295.9	156.56	399.70	11.93
0	0	22.67	295.9	156.56	417.90	12.47
0	0	22.75	295.9	156.56	413.60	12.34
0	0	22.89	295.9	156.56	413.50	12.34
0	0	22.99	295.9	156.56	432.20	12.90
0	0	23.02	295.6	156.40	438.70	13.09
0	0	23.08	294.6	155.87	408.10	12.18
0	0	23.01	293.6	155.34	406.80	12.14
0	0	22.85	292.6	154.81	404.70	12.07
0	0	22.69	291.6	154.29	375.40	11.20
0	0	22.41	290.5	153.70	381.80	11.39
0	0	22.23	289.9	153.39	380.80	11.36
0	0	21.98	289.9	153.39	395.50	11.80
0	0	21.91	289.9	153.39	415.80	12.41
0	0	21.83	289.9	153.39	427.20	12.75
0	0	21.82	289.8	153.33	419.10	12.50
0	0	21.97	289.9	153.39	407.50	12.16
0	0	22.1	289.9	153.39	400.70	11.96
0	0	22.3	289.9	153.39	416.90	12.44
0	0	22.41	289.9	153.39	412.60	12.31
0	0	22.58	289.9	153.39	418.60	12.49
0	0	22.72	289.9	153.39	418.40	12.48
0	0	22.81	289.9	153.39	423.50	12.64
0	0	22.94	289.8	153.33	418.80	12.50
0	0	22.94	289.9	153.39	431.90	12.89
0	0	22.92	289.9	153.39	445.80	13.30
0	0	22.93	289.9	153.39	469.60	14.01
0	0	22.73	289.9	153.39	480.10	14.32
0	0	22.58	289.9	153.39	466.20	13.91
0	0	22.43	289.8	153.33	510.50	15.23
0	0	22.23	290	153.44	553.00	16.50
0	0	22.16	289.8	153.33	545.00	16.26
0	0	22.04	289.9	153.39	519.40	15.50
0	0	22.15	289.9	153.39	515.40	15.38
0	0	22.23	289.9	153.39	514.70	15.36
0	0	22.26	289.9	153.39	523.00	15.60
0	0	22.35	289.8	153.33	512.20	15.28
0	0	22.37	289.9	153.39	522.10	15.58
0	0	22.39	289.9	153.39	531.10	15.85
0	0	22.42	289.8	153.33	516.40	15.41
0	0	22.4	289.9	153.39	505.40	15.08
0	0	22.48	289.9	153.39	482.00	14.38
0	0	22.55	289.9	153.39	461.60	13.77

Buzzi Unicem USA
Cape Girardeau Plant
NOx Emission Data
November 2004

Whole Tires TPH	LWF LPM	Total Coal TPH	Kiln Feed TPH	Clinker Production TPH	NOx PPM	NOx LPM
0	0	22.57	289.8	153.33	490.80	14.64
0	0	22.57	289.8	153.33	486.00	14.50
0	0	22.59	289.9	153.39	478.80	14.29
0	0	22.51	289.8	153.33	481.70	14.37
0	0	22.37	289.9	153.39	480.10	14.32
0	0	22.31	289.9	153.39	492.60	14.70
0	0	22.22	290	153.44	499.40	14.90
0	0	22.21	289.7	153.28	480.20	14.33
0	0	22.06	290	153.44	494.60	14.76
0	0	22	289.8	153.33	531.70	15.86
0	0	22.07	289.9	153.39	507.10	15.13
0	0	22.13	289.9	153.39	523.50	15.62
0	0	22.18	289.9	153.39	556.20	16.59
0	0	22.16	289.8	153.33	563.60	16.82
0	0	22.13	289.9	153.39	479.40	14.30
0	0	22.1	289.9	153.39	463.20	13.82
0	0	22.02	289.9	153.39	460.70	13.75
0	0	22.02	289.9	153.39	467.30	13.94
0	0	21.89	289.9	153.39	464.00	13.84
0	0	21.97	289.9	153.39	471.60	14.07
0	0	22.03	289.8	153.33	486.70	14.52
0	0	22.21	289.9	153.39	544.90	16.26
0	0	22.3	289.9	153.39	530.10	15.82
0	0	22.28	289.8	153.33	565.30	16.87
0	0	22.38	289.9	153.39	572.90	17.09
0	0	22.37	290	153.44	535.90	15.99
0	0	22.37	289.8	153.33	495.40	14.78
0	0	22.42	289.8	153.33	463.80	13.84
0	0	22.41	290	153.44	470.30	14.03
0	0	22.37	289.8	153.33	475.10	14.18
0	0	22.39	289.9	153.39	504.60	15.06
0	0	22.36	289.8	153.33	503.10	15.01
0	0	22.41	289.9	153.39	500.80	14.94
0	0	22.36	289.9	153.39	510.40	15.23
0	0	22.29	289.9	153.39	507.80	15.15
0	0	22.32	289.8	153.33	524.50	15.65
0	0	22.27	289.9	153.39	526.20	15.70
0	0	22.3	289.8	153.33	533.10	15.91
0	0	22.22	289.8	153.33	534.00	15.93
0	0	22.23	289.8	153.33	539.80	16.11
0	0	22.18	290	153.44	552.60	16.49
0	0	22.11	289.9	153.39	503.20	15.01
0	0	22.14	289.8	153.33	473.60	14.13
0	0	22.18	289.9	153.39	477.30	14.24
0	0	22.22	289.8	153.33	493.00	14.71
0	0	22.28	289.9	153.39	533.30	15.91
0	0	22.25	289.9	153.39	549.40	16.39
0	0	22.32	289.8	153.33	516.50	15.41
0	0	22.28	289.9	153.39	527.40	15.74
0	0	22.35	289.9	153.39	561.10	16.74
0	0	22.38	289.9	153.39	552.50	16.48

Buzzi Unicem USA
Cape Girardeau Plant
NOx Emission Data
November 2004

Whole Tires TPH	LWF LPM	Total Coal TPH	Kiln Feed TPH	Clinker Production TPH	NOx PPM	NOx LPM
0	0	22.32	289.8	153.33	544.60	16.25
0	0	22.25	289.9	153.39	528.20	15.76
0	0	22.24	289.9	153.39	561.60	16.76
0	0	22.22	289.8	153.33	582.70	17.39
0	0	22.21	289.9	153.39	525.00	15.66
0	0	22.17	289.9	153.39	497.40	14.84
0	0	22.15	289.9	153.39	516.00	15.40
0	0	22.14	289.9	153.39	539.70	16.10
0	0	22.05	289.8	153.33	532.20	15.88
0	0	22.06	289.9	153.39	536.60	16.01
0	0	22.1	289.9	153.39	525.80	15.69
0	0	22.09	290	153.44	527.90	15.75
0	0	22.03	289.8	153.33	504.50	15.05
0	0	22	289.8	153.33	494.40	14.75
0	0	22.01	289.9	153.39	482.80	14.40
0	0	22.03	289.9	153.39	477.30	14.24
0	0	22.04	289.8	153.33	480.40	14.33
0	0	22.03	289.9	153.39	476.30	14.21
0	0	22.09	289.9	153.39	473.80	14.14
0	0	22.09	289.9	153.39	471.00	14.05
0	0	22.15	289.9	153.39	490.90	14.65
0	0	22.14	289.9	153.39	505.80	15.09
0	0	22.25	290	153.44	508.30	15.17
0	0	22.29	289.8	153.33	520.10	15.52
0	0	22.18	289.8	153.33	563.80	16.82
0	0	22.14	289.9	153.39	586.60	17.50
0	0	22.06	290	153.44	611.00	18.23
0	0	21.98	289.8	153.33	590.70	17.62
0	0	21.96	289.9	153.39	574.70	17.15
0	0	21.97	289.8	153.33	574.60	17.14
0	0	22	289.9	153.39	643.00	19.18
0	0	22.13	289.8	153.33	654.80	19.54
0	0	22.13	289.8	153.33	647.40	19.32
0	0	22.12	289.9	153.39	612.20	18.27
0	0	22.26	290	153.44	631.60	18.84
0	0	22.28	289.8	153.33	642.00	19.15
0	0	22.16	289.9	153.39	650.90	19.42
0	0	22.12	289.8	153.33	648.10	19.34
0	0	22.05	289.9	153.39	633.00	18.89
0	0	21.96	289.8	153.33	653.60	19.50
0	0	21.91	289.9	153.39	648.30	19.34
0	0	21.87	289.8	153.33	594.60	17.74
0	0	21.85	289.9	153.39	619.80	18.49
0	0	21.84	289.9	153.39	664.00	19.81
0	0	21.87	289.9	153.39	718.00	21.42
0	0	21.86	290	153.44	745.20	22.23
0	0	21.87	289.8	153.33	746.80	22.28
0	0	21.93	289.8	153.33	724.40	21.61
0	0	22.03	289.9	153.39	679.00	20.26
0	0	22.01	289.8	153.33	630.60	18.81
0	0	22.08	289.9	153.39	625.80	18.67

Buzzi Unicem USA
Cape Girardeau Plant
NOx Emission Data
November 2004

Whole Tires TPH	LWF LPM	Total Coal TPH	Kiln Feed TPH	Clinker Production TPH	NOx PPM	NOx LPM
0	0	22.06	289.9	153.39	617.90	18.44
0	0	22.02	289.9	153.39	593.00	17.69
0	0	21.94	289.8	153.33	599.30	17.88
0	0	21.94	290	153.44	605.00	18.05
0	0	21.96	289.9	153.39	613.80	18.31
0	0	22.01	289.9	153.39	610.60	18.22
0	0	21.96	289.9	153.39	651.40	19.44
0	0	22.05	289.9	153.39	690.60	20.60
0	0	22.01	289.9	153.39	684.10	20.41
0	0	22.08	289.8	153.33	683.00	20.38
0	0	22.08	290	153.44	618.50	18.45
0	0	22.04	289.8	153.33	634.70	18.94
0	0	22.13	289.8	153.33	740.30	22.09
0	0	22.17	289.9	153.39	735.00	21.93
0	0	22.08	289.9	153.39	698.00	20.83
0	0	21.89	289.8	153.33	692.40	20.66
0	0	21.91	289.8	153.33	677.70	20.22
0	0	21.78	289.9	153.39	698.10	20.83
0	0	21.77	289.8	153.33	671.00	20.02
0	0	21.8	289.9	153.39	704.50	21.02
0	0	21.85	289.9	153.39	709.30	21.16
0	0	21.9	289.8	153.33	724.70	21.62
0	0	21.91	289.9	153.39	740.00	22.08
0	0	21.79	289.8	153.33	719.40	21.46
0	0	21.72	289.9	153.39	717.50	21.41
0	0	21.84	289.9	153.39	718.00	21.42
0	0	21.74	289.8	153.33	726.20	21.67
0	0	21.82	289.9	153.39	727.30	21.70
0	0	21.82	289.9	153.39	705.50	21.05
0	0	21.78	289.9	153.39	689.50	20.57
0	0	21.88	289.9	153.39	660.50	19.71
0	0	21.84	289.9	153.39	671.60	20.04
0	0	21.9	289.9	153.39	661.90	19.75
0	0	21.92	289.8	153.33	651.90	19.45
0	0	21.94	289.9	153.39	637.20	19.01
0	0	21.91	289.8	153.33	637.20	19.01
0	0	21.91	289.9	153.39	622.10	18.56
0	0	21.84	289.8	153.33	634.10	18.92
0	0	21.84	289.9	153.39	627.70	18.73
0	0	21.83	289.9	153.39	615.00	18.35
0	0	21.87	289.9	153.39	607.80	18.13
0	0	21.91	289.9	153.39	597.70	17.83
0	0	21.87	289.8	153.33	599.20	17.88
0	0	21.95	289.9	153.39	575.80	17.18
0	0	21.96	289.9	153.39	590.50	17.62
0	0	21.87	289.8	153.33	575.40	17.17
0	0	21.8	289.9	153.39	573.00	17.10
0	0	21.8	289.9	153.39	574.50	17.14
0	0	21.71	289.8	153.33	572.10	17.07
0	0	21.77	290	153.44	595.60	17.77
0	0	21.79	289.8	153.33	542.30	16.18

Buzzi Unicem USA
Cape Girardeau Plant
NOx Emission Data
November 2004

Whole Tires TPH	LWF LPM	Total Coal TPH	Kiln Feed TPH	Clinker Production TPH	NOx PPM	NOx LPM	
0	0	21.75	289.9	153.39	482.70	14.40	
0	0	21.66	289.9	153.39	451.80	13.48	
0	0	21.74	289.8	153.33	454.40	13.56	
0	0	22.21	289.9	153.39	481.50	14.37	
0	0	22.64	289.9	153.39	513.50	15.32	
0	0	22.76	289.8	153.33	537.80	16.05	
0	0	23.01	289.9	153.39	553.50	16.51	
0	0	23.11	289.9	153.39	537.60	16.04	
0	0	23.06	289.8	153.33	523.50	15.62	
0	0	23	289.9	153.39	538.60	16.07	
0	0	22.93	289.9	153.39	537.40	16.03	
0	0	22.95	289.8	153.33	538.30	16.06	
0	0	22.93	289.9	153.39	514.70	15.36	
0	0	22.94	289.9	153.39	497.20	14.83	
0	0	22.89	289.9	153.39	490.00	14.62	
0	0	22.97	290	153.44	480.90	14.35	
0	0	22.92	289.9	153.39	463.40	13.83	
0	0	23.07	289.8	153.33	483.80	14.43	
0	0	22.5	289.9	153.39	448.90	13.39	
0	0	21.84	289.9	153.39	421.50	12.58	
0	0	21.87	289.8	153.33	416.10	12.41	
0	0	22.44	289.9	153.39	424.80	12.67	
0	0	23.11	289.9	153.39	408.60	12.19	
0	0	23.36	289.9	153.39	409.40	12.21	
0	0	23.25	289.9	153.39	403.40	12.04	
0	0	23.34	289.9	153.39	397.80	11.87	
0	0	23.44	289.9	153.39	399.80	11.93	
0	0	23.32	289.9	153.39	406.90	12.14	
0	0	23.31	289.8	153.33	437.10	13.04	
0	0	23.35	289.9	153.39	466.20	13.91	
0	0	23.28	290	153.44	452.80	13.51	
0	0	23.32	289.9	153.39	454.60	13.56	
0	0	23.31	289.8	153.33	453.10	13.52	
0	0	23.46	289.9	153.39	462.80	13.81	
0	0	23.38	289.8	153.33	461.10	13.76	
0	0	20.453	289.8	153.33	452.90	13.51	
0	0	21.64	290	153.44	450.50	13.44	
0	0	21.73	289.8	153.33	455.30	13.58	
0	0	21.8	289.9	153.39	461.70	13.78	
0	0	21.68	289.9	153.39	465.00	13.87	
0	0	21.76	289.9	153.39	458.20	13.67	
0	0	21.71	289.9	153.39	448.90	13.39	
0	0	21.67	289.8	153.33	425.10	12.68	
0	0	21.6	290	153.44	430.40	12.84	
0	0	21.72	289.9	153.39	457.70	13.66	
0	0	22.313969	291.91054	154.45	466.03	13.90	Averages

Attachment D

Baseline Ozone Season NOx Calculations

Baseline Ozone Season NOx Calculations

Highest clinker production during Ozone Season (May1-September 30):

1998 597,783 Tons
2000 592,718 Tons
Average: 595,250.5

2004 Emission Testing Results:

Clinker Production: 154.45 Tons/hour

Average NOx Emission Rate: 466.0276 ppmv

Coal/Coke only Emission Factor Calculation:

NOx Emission Rate: dscf = flow * concentration
= 250,000 dscfm * 466.0276 ppmv
= 116.5 dscfm NOx

m = PVmw/RT
Where: m = mass NOx emitted
P = Standard Pressure
V = Volume of NOx
R = 0.73
T = Standard Temperature
mw = Molecular Weight of NOx (NO_2)

$$m = \frac{(1atm)(116.5\ dscfm)(46)}{(0.73)(528)}$$

= 13.9044 lb NOx/min.

Coal/Coke only Emission Factor: EF = Emission Rate/Production Rate

$$= \frac{13.9044\ lb/min}{2.5742\ T/min.}$$

= 5.401514 lb NOx/Ton clinker

Baseline Ozone Emissions (May 1-September 30):

= Ave. Production (highest 2 yrs) * Coal/Coke Emission Factor
= 595,250.5 Tons * 5.401514 lb NOx/Ton clinker
= 3,215,253.9 lbs
= 1607.627 Tons

BUZZI UNICEM USA
MIDWEST DIVISION - River Plant

January 6, 2005

Mr. John Rustige
Missouri Department of Natural Resources
Air Pollution Control Program
PO Box 176
Jefferson City, Missouri 65102-0176

Re: Non-EGU NOx SIP Call – NOx Emission Inventory

Dear Mr. Rustige:

We are providing the following information in response to your e-mail request of October 26, 2004, for the subject emissions data. As we understand it, the Air Program is looking to compile a baseline emission inventory for sources that will potentially be affected by the rulemaking undertaken in response to the Non-EGU NOx SIP call. The Air Program is asking the cement kiln sources to provide a "before control" emission factor in order to establish a baseline ozone season emission total. This baseline will be determined on a two-year average basis. We also understand that the Department is amenable to allowing cement kilns to consider establishing this baseline from two years within the 1995 through 2000 calendar years.

In the 1995 through 2000 time period we reported our NOx emissions using an emission factor based on site-specific emission data collected in 1994. This testing was conducted while we were operating a waste-derived fuel program that utilized energy-bearing liquid waste materials as fuel (LWF) in our kiln systems. These materials were co-fired with coal/coke at the time that the emissions data were collected. The resulting emission factor was determined to be approximately 7.73 pounds of NOx per ton of clinker produced.

We have since terminated our LWF program and now utilize only solid conventional fuels in our kiln system. We recently completed additional emission testing conducted under petroleum coke firing operations only. This testing was conducted to establish a the current emission capability of our system in preparation of an emission compliance test required under Construction Permit number 122003-008, issued in November of 2003. This testing was performed pursuant to a Test Plan approved by the Air Program. A full report of this test event will be submitted in the coming months after completion of the compliance testing.

This recent test event documented that our petroleum coke-only NOx emission factor averaged approximately 10.93 pounds of NOx per ton of clinker produced. In comparing the recent results with the 1994 emission factor it appears the use of LWF imparted a NOx-control effect on the emissions. This stands to reason given that LWF

had both a lower nitrogen content and higher moisture content as compared to coal and/or petroleum coke. The lower nitrogen content provided a lower nitrogen loading to the combustion environment, thereby reducing the availability of nitrogen for NOx formation. The higher moisture content served to reduce the flame temperature in the combustion environment, reducing the potential of the system to form NOx via the "thermal NOx" formation mechanism. In our case, approximately a 29% decrease in NOx emissions was observed by firing LWF in our kiln system. We understand this is approximately the same level of reduction found at other facilities in the State that continue to use energy-bearing wastes as fuel in cement kilns.

Therefore, to satisfy your request we have used our 10.93 lb/ton factor together with data from the 1995 through 2000 period to estimate our two-year average ozone season NOx emission rate as follows:

Two-year average clinker production – 594,989 tons per ozone season (TPOS)
(based on 1996 and 2000 production records)

Two-year average "before control" NOx emissions – 3,251.6 TPOS

If you have any questions on these estimates or our approach, please contact me at (636) 937-7601, or Mr. Dan Nugent of our Bethlehem Corporate Office at (610 882-5000.

Sincerely,

Stephen M. Miloscia
Environmental & Safety Engineer

DBN

cc: D. Nugent
T. Rader